

Camber Configuration Control for Performance Optimization (C3PO), Phase I

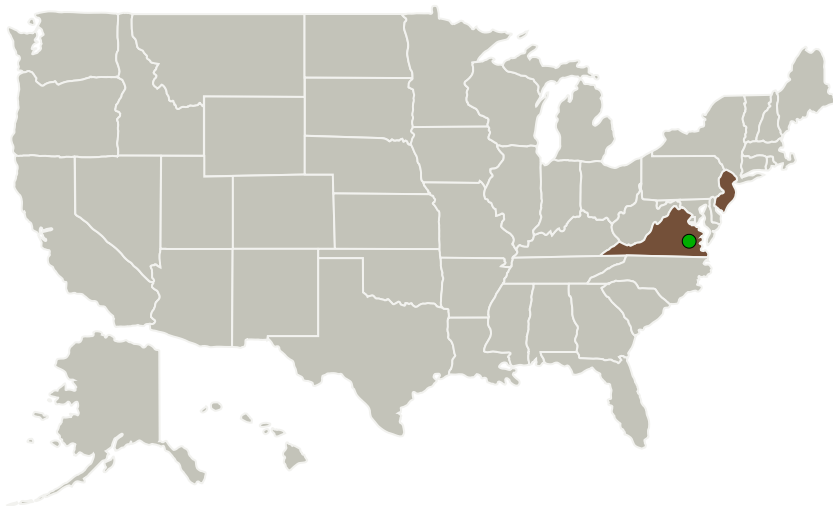
Completed Technology Project (2014 - 2014)



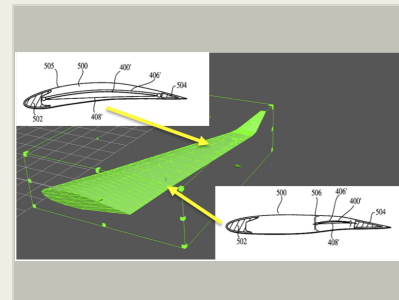
Project Introduction

A novel actuation concept previously used for trailing edge tab control is to be extended for use in spanwise camber control for enhanced aerodynamic performance of next generation aircraft designs. The key features of its low-power, two-position (bistable) nature and small size permit its application as secondary structure within wing assemblies, thereby allowing for flight-dependent customization of the spanwise camber to optimize vehicle aerodynamic efficiency. The proposed Phase I program will leverage previous development success of the actuation concept to scale design applications for ultimate use on transport-category aircraft, and provide risk reduction via demonstration wind tunnel tests on a scaled wing half-span model. A byproduct of the scaling law will be its incorporation within a Multidisciplinary Design Analysis and Optimization (MDAO) tool for ease of exploration of the actuation features in the context of novel vehicle configurations having flight control for performance adjustment.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Continuum Dynamics, Inc.	Lead Organization	Industry	Ewing, New Jersey
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



Camber Configuration Control for Performance Optimization (C3PO) Project Image

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

Camber Configuration Control for Performance Optimization (C3PO), Phase I

Completed Technology Project (2014 - 2014)



Primary U.S. Work Locations

New Jersey

Virginia

Project Transitions

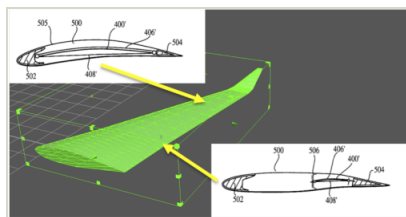
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/137492>)

Images



Project Image

Camber Configuration Control for Performance Optimization (C3PO)
Project Image

(<https://techport.nasa.gov/image/132779>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Continuum Dynamics, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

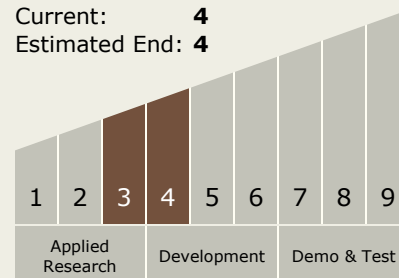
Robert Mckillip

Technology Maturity (TRL)

Start: **3**

Current: **4**

Estimated End: **4**



Camber Configuration Control for Performance Optimization (C3PO), Phase I

Completed Technology Project (2014 - 2014)



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.3 Flexible Material Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System